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## forest insect & disease management methods application group

2810 Chiles Rd. ■ Davis, Ca. 95616

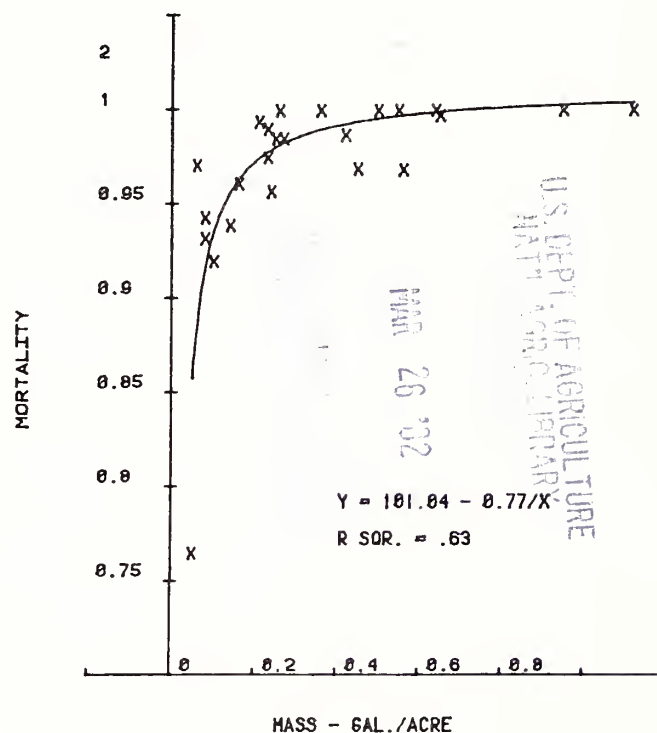
April 1977 (3)

### NEWSLETTER

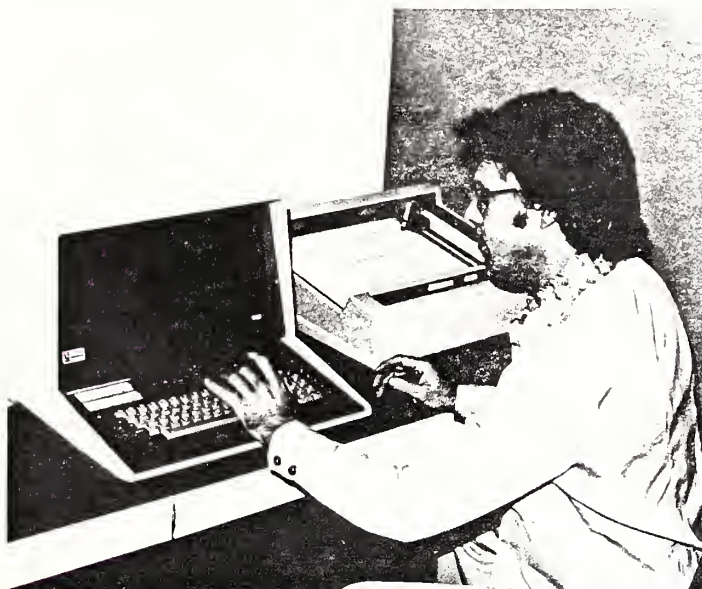
#### NEW COMPUTER/PLOTTER CAPABILITY

MAG recently has acquired a Tektronix 4051 desk top computer with plotter interface. This system is capable of performing relatively complex calculations, and is equipped with a series of software tapes written in the BASIC computer language. The plotter produces reproduction-quality drawings, and has been of considerable value to date for preparing regression equations of spray deposit over western spruce budworm mortality derived from recent pilot and operational control programs conducted by several Regions.

The system is relatively easy to operate, and Region and Area FI&DM staffs are welcome to use this equipment for their data processing needs.



*Sample of plotter output*



*Bob Young, MAG Biometrician,  
generating plot of data set on  
Tektronix computer.*

#### WESTERN SPRUCE BUDWORM EVALUATIONS

The special group working to improve western spruce budworm defoliation prediction methods (introduced in the November, 1976 MAG Newsletter) met recently at Davis to discuss progress. They reported that in August, a total of 48 entomological units (blocks) were sampled throughout five western Regions (1, 2, 3, 4, and 6) concerned with the budworm. Blocks varied in size from about 3,000 to over 50,000 acres. An average of 10-15 egg mass samples were taken per block. Each sample consisted of a cluster of three Douglas-fir trees, with two branches taken from the midcrown of each tree. Analysis of this egg mass

data indicated that, in most blocks, sampling errors greatly exceeded the stated goal  $\bar{x} \pm 20\%$  SE. This showed that a larger sample size would be necessary to adequately assess budworm egg populations. Consequently, the working group decided that a minimum of 20 egg mass sample plots would be taken next summer in each entomological unit.

Procedures have been devised for data storage and analysis at the Fort Collins Computer Center. Working directly from standardized field data forms, personnel in each Regional Office will code egg mass and defoliation data on cards for transmittal to Fort Collins. Summary tables of egg mass densities, defoliation estimates, and prediction models would be available to the Regions immediately after the data is entered into the system.

A combination work plan and progress report for this project is in preparation and will be available before the next field season. Recommendations will be made to Research for studies to determine certain aspects of budworm oviposition which are critical to the success of this project.

#### COMPUTER MAPPING EVALUATED

MAG is evaluating two computer mapping systems for potential use by FI&DM. These systems would record, summarize, store, and plot data from forest insect and disease detection surveys. The systems are the Wildlife Resource Information System (WRIS), developed by the Pacific Southwest Forest and Range Experiment Station in Berkeley, California, and PLOT, a system developed by Region 6 in Portland, Oregon.

The evaluation is being conducted with data from portions of the Targhee National Forest in Idaho, using three

levels of information: ownership, 1976 mountain pine beetle sketch map data, and the 1975 mountain pine beetle sketch map data. Outputs from the test will include acreage tables, location and size of each parcel (polygon), and a hard copy plot.

The participating units and coordinators are Bob Young, MAG; Tom Gregg, R-6; Dave Blakeman, PSW; and Tom George, Group Leader, Computer Mapping Systems, W.O. The evaluation will be completed in March, followed by a report.

#### MOUNTAIN PINE BEETLE DAMAGE SURVEY

During December, a working group met in Davis, California, to start design of the Mountain Pine Beetle Statewide Damage Survey. To achieve widespread participation in the planning and conduct of this and other damage surveys, representatives from all of the western Regions (except R-10) and the Pacific Southwest and Rocky Mountain Forest and Range Experiment Stations attended. The express purpose of the meeting was to identify fundamentals for the design and implementation of pilot surveys.

It was decided the initial step will be a joint undertaking by Regions 2, 4, and MAG, entailing two separate surveys during 1977. One aimed at ponderosa pine in the Black Hills National Forest, South Dakota and Wyoming, and the other at lodgepole pine on the Targhee National Forest in Idaho. The surveys will be confined to epidemic areas and will utilize a stratified, double sampling system. The system will use (1) sketchmapping to stratify the outbreaks by damage intensities, (2) large scale (1:6000) color aerial photography, and (3) ground sampling to adjust photo counts by regression and to measure residual green stand.



## DWARF MISTLETOE DAMAGE SURVEY

A Dwarf Mistletoe Loss Assessment Working Group, made up of FI&DM staff specialists and Forest Service research personnel, met late last year to design surveys which will update information on dwarf mistletoe losses periodically, and also provide a data base for management decisions. Activities relative to acquisition of data on losses due to dwarf mistletoe on ponderosa and lodgepole pine were determined at this meeting.

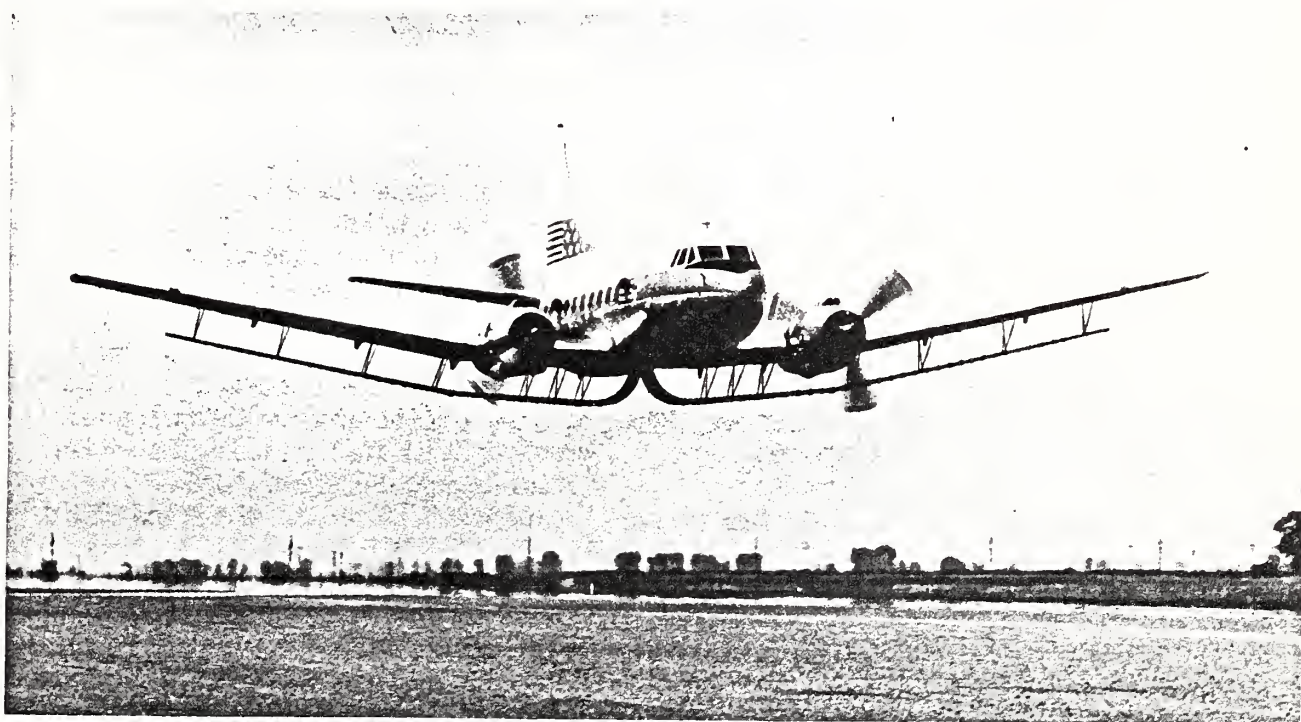
The working group decided that loss estimates for three western forests should be made during the 1977 field season as a prerequisite to expanded surveys in the future. These would utilize existing data from the Medicine Bow National Forest in Wyoming, the Prescott National Forest in Arizona, and the Deschutes National Forest in Oregon. The group will then evaluate timber inventory, timber survey, and mistletoe survey data as sources of volume loss information.

## NEW "CHALLENGER" SPRAY SYSTEM EVALUATED

MAG was requested by the Northeastern Area FI&DM staff to evaluate an aerial spray system for applying insecticides to control spruce budworm in Maine.

The spray system, known as "The Challenger", was developed by Ag International Flying Service of Madera, California. It works on a ram air principle, and is installed in a twin-engined Martin 404 aircraft. Scoops on the side of the plane channel high velocity air to a chamber where the air is mixed with the insecticide. From here, the mixture is distributed to spray booms mounted below the wings and running nearly the entire wingspan. The spray is emitted into the atmosphere from simple openings along this boom. Droplet size can be reduced by placing mesh screens over the openings.

The aircraft and spray equipment appear to have several advantages over other systems. For one, the Martin 404 is very maneuverable, capable of operating from short runways and spraying mountainous



*Martin 404 equipped with Challenger Spray System.*

terrain. The dispersal equipment is simpler than conventional spray equipment because it uses ram air instead of a hydraulic pump. High velocity air flow breaks up the droplets in lieu of high pressures and nozzles. Therefore, equipment failures in conventional spray systems associated with line pressures, pumps, and nozzles are eliminated.

Data analyzed from spray runs over deposit cards demonstrated that the system is capable of producing a swath width and drop size spectrum in the desired range.

#### CHARACTERIZATION MADE OF GYPSY MOTH VIRUS SPRAYS

Researchers of the USDA Expanded Gypsy Moth Program in cooperation with MAG personnel conducted spray trials at Davis, California, during November, 1976, to determine spray characteristics of a nucleopolyhedrosis virus formulation specific to gypsy moth for control of this pest. Information on aerodynamic droplet size, drop density on collection surfaces, and mass recovery were obtained, and will be used to develop application procedures for using the virus against the Gypsy Moth. MAG personnel provided field support in sampling and assessment of the spray deposit cards.

#### WESTERN DEAD TIMBER PILOT STUDY

Bill Klein, MAG Survey Systems Specialist, spent two weeks in December at the NASA Lyndon B. Johnson Space Center in Houston, as a member of an aerial photographic interpretation team, assembled by the USFS Forestry Applications Project, to assist in a Western Dead Timber Pilot Study. This study, planned and conducted under the leadership of the Forestry Application Program, USFS and NASA, was designed to provide current data on harvestable timber mortality in

the Clearwater National Forest, Idaho. The survey was conducted with a high altitude, optical bar camera in a U2 aircraft. The initial phase, which involves classification of stands into predetermined intensity classes, is scheduled for completion in January, 1978.

#### NORTHWEST FOREST PEST ACTION COUNCIL VISITS MAG; PSW

Seven members of the insect committee of the Northwest Forest Pest Action Council visited the U.S. Forest Service facilities of MAG and the Field Evaluation of Chemical Insecticides Project of the Pacific Southwest Forest and Range Experiment Station (PSW 2206). Personnel of both units briefed the group on their missions, goals, activities, and accomplishments. This briefing was followed by a tour of the facilities. Hopefully, these meetings will set a precedent for similar groups to visit.

#### PAPERS, PUBLICATIONS AND PRESENTATIONS

Jack Barry presented a paper entitled: "A Canopy Penetration Model for Aerially Disseminated Insecticide Spray Released Above Coniferous Forests" at the Fourth National Conference on Fire and Forest Meteorology, of the Society of American Foresters and American Meteorological Society held in St. Louis, Missouri last November.

Bill Ciesla attended the National Meeting of the Entomological Society of America held in Honolulu, Hawaii in November and December, 1976. He presented two papers. One was entitled "Douglas-fir Tussock Moth: Direct Control with Chemical and Microbial Insecticides", a symposium paper sponsored by the USDA Accelerated DFTM Program. The other was: "Methods Application Group - A New Concept On Forest Insect and Disease Management".

## PERSONNEL CHANGES

RAY LUEBBE, MAG Mathematical Statistician, has accepted an assignment in Washington, D.C. with the USDA Statistical Reporting Service, Economic Management Support Center. LYNNE WHYTE (Whitcombe), has been promoted and reassigned to MAG Biological Technician. Previously she gave clerical support to the MAG staff. PAM ELAM was also promoted, from Clerk-DMT to Secretary DMT.

JANET ZACHARIAS recently filled the vacated Clerk-DMT position, retraining to Forest Service employment after a four-year lapse. Her former jobs included secretarial positions with W.O. Timber Management and S&PF staffs, a clerk-typist in the Budget Division of Agricultural Research Service, W.O., and typist on the White House staff.

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